

## Section 1: Product and Company Identification

**Absolute Accuracy**  
4591 S Wayside Dr  
Houston, TX 77087  
(832) 571-2387

Product Code: 18

**Synonyms:** N/A  
**Recommended Use:** CALIBRATION GAS  
**Usage Restrictions:** INDUSTRIAL CALIBRATION GAS

## Section 2: Hazards Identification



**Danger**

### Hazard Classification:

Aspiration Hazard (Category 1)  
Carcinogenicity (Category 1.A)  
Eye Effects (Category 2.B)  
Gases Under Pressure  
Germ Cell Mutagenicity (Category 1.B)  
Specific target organ toxicity (Repeated Exposure) (Category 1)

### Hazard Statements:

Causes damage to organs through prolonged or repeated exposure  
Causes eye irritation  
Contains gas under pressure; may explode if heated  
May be fatal if swallowed and enters airways  
May cause cancer  
May cause genetic defects

### Precautionary Statements

#### Prevention:

Wash thoroughly after handling.  
Do not eat, drink or smoke when using this product.  
Do not handle until all safety precautions have been read and understood.  
Do not breathe dust/fume/gas/mist/ vapors/spray..  
Wear protective gloves, protective clothing, eye protection and face protection.  
Obtain special instructions before use.

#### Response:

Do NOT induce vomiting.  
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
If swallowed: Rinse mouth. Do NOT induce vomiting.

Immediately call a poison center or doctor.  
 If exposed or concerned: Get medical advice/attention.

**Storage:**

Protect from sunlight.  
 Store in well-ventilated place.  
 Store locked up.

**Disposal:**

Dispose of contents and/or container in accordance with applicable regulations.

## Section 3: Composition/Information on Ingredients

	CAS #	Concentration
<b>Benzene</b>	71-43-2	5 PPM
<b>Oxygen</b>	7782-44-7	20.9 %
<b>Nitrogen</b>	7727-37-9	BALANCE

	Chemical Substance	Chemical Family	Trade Names
<b>Benzene</b>	BENZENE	Aromatic	BENZOL; CYCLOHEXATRIENE; BENZOLE; PHENE; PYROBENZOL; PYROBENZOLE; CARBON OIL; COAL TAR NAPHTHA; PHENYL HYDRIDE; BENZOLENE; BICARBURET OF HYDROGEN; COAL NAPHTHA; MOTOR BENZOL; ANNULENE; (6)ANNULENE; RCRA U019; STCC 4908110; UN 1114; C6H6
<b>Oxygen</b>	OXYGEN, COMPRESSED GAS	Inorganic gases	OXYGEN; DIOXYGEN; MOLECULAR OXYGEN; OXYGEN MOLECULE; PURE OXYGEN; UN 1072; O2
<b>Nitrogen</b>	NITROGEN, COMPRESSED GAS	Inorganic gases	DIATOMIC NITROGEN; DINITROGEN; NITROGEN; NITROGEN-14; NITROGEN GAS; UN 1066; N2

## Section 4: First Aid Measures

	Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
<b>Benzene</b>	Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.	Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately. Do not induce vomiting.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen. For ingestion, consider gastric lavage.
<b>Oxygen</b>	None expected	None expected	Not likely route of exposure	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.	None

	<b>Skin Contact</b>	<b>Eye Contact</b>	<b>Ingestion</b>	<b>Inhalation</b>	<b>Note to Physicians</b>
<b>Nitrogen</b>	Wash exposed skin with soap and water.	Flush eyes with plenty of water.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.

## Section 5: Fire Fighting Measures

	<b>Suitable Extinguishing Media</b>	<b>Products of Combustion</b>	<b>Protection of Firefighters</b>
<b>Benzene</b>	Regular dry chemical, carbon dioxide, water, regular foam. Large fires: Use regular foam or flood with fine water spray.	Carbon monoxide, carbon dioxide, irritating aldehydes and ketones and other irritating/toxic gases	<ul style="list-style-type: none"> <li>Any air-purifying respirator with a full facepiece and an organic vapor canister. Any self-contained breathing apparatus with a full facepiece. Chemical protective clothing.</li> </ul>
<b>Oxygen</b>	Non-flammable. Use extinguishing agent appropriate for the material which is burning. Use water in large quantities for fires involving oxygen.	Oxides of burning material	<ul style="list-style-type: none"> <li>Respiratory protection may be needed for frequent or heavy exposure.</li> <li>None</li> </ul>
<b>Nitrogen</b>	Non-flammable. Use suitable extinguishing media for surrounding fire. Cylinders may rupture or explode if exposed to heat.	Non-flammable	<ul style="list-style-type: none"> <li>Respiratory protection may be needed for frequent or heavy exposure.</li> </ul>

## Section 6: Accidental Release Measures

	<b>Personal Precautions</b>	<b>Environmental Precautions</b>	<b>Methods for Containment</b>
<b>Benzene</b>	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.	Avoid heat, flames, sparks and other sources of ignition. Keep out of water supplies and sewers.	Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition. Dig holding area such as lagoon, pond or pit for containment.
<b>Oxygen</b>	Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering.	Avoid contact with combustible materials.	Stop leak if possible without personal risk.
<b>Nitrogen</b>	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.	No significant effects from contamination expected.	Stop leak if possible without personal risk.

	<b>Methods for Cleanup</b>	<b>Other Information</b>
<b>Benzene</b>	Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Cover with absorbent sheets, spill-control pads or pillows. Apply detergents, soaps, alcohols or another surface active agent. Collect with absorbent into suitable container. Absorb with activated carbon. Remove trapped material with suction hoses. Collect spilled material using mechanical equipment.	Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA). Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).
<b>Oxygen</b>	Stop leak and ventilate	None
<b>Nitrogen</b>	N/A	N/A

## Section 7: Handling and Storage

	Handling	Storage
<b>Benzene</b>	Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 125F (52C). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.	Do not get liquid in eyes, on skin, or clothing. Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Open valve slowly. Close cylinder valve after each use; keep closed even when empty. If valve is hard to open, discontinue use and contact your supplier.
<b>Oxygen</b>	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep separated from incompatible substances.
<b>Nitrogen</b>	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep separated from incompatible substances.

## Section 8: Exposure Controls/Personal Protection

	Exposure Guidelines
<b>Benzene</b>	BENZENE: 1 ppm OSHA TWA 5 ppm OSHA STEL 15 minute(s) 0.5 ppm OSHA action level 10 ppm OSHA TWA (applies to industry exempt from benzene standard 1910.1028) 25 ppm OSHA ceiling (applies to industry exempt from benzene standard 1910.1028) 50 ppm OSHA peak 10 minute(s) (applies to industry exempt from benzene standard 1910.1028) 0.5 ppm ACGIH TWA (skin) 2.5 ppm ACGIH STEL (skin) 0.1 ppm NIOSH recommended TWA 10 hour(s) 1 ppm NIOSH recommended STEL
<b>Oxygen</b>	OXYGEN, COMPRESSED GAS: No occupational exposure limits established.
<b>Nitrogen</b>	NITROGEN, COMPRESSED GAS: NITROGEN: ACGIH (simple asphyxiant)

### Engineering Controls

Handle only in fully enclosed systems.

	Eye Protection	Skin Protection	Respiratory Protection
<b>Benzene</b>	Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	Wear appropriate chemical resistant clothing.	Any air-purifying respirator with a full facepiece and an organic vapor canister. Any self-contained breathing apparatus with a full facepiece. Chemical protective clothing.
<b>Oxygen</b>	Eye protection not required, but recommended.	Protective clothing is not required.	Respiratory protection may be needed for frequent or heavy exposure.
<b>Nitrogen</b>	Eye protection not required, but recommended.	Protective clothing is not required.	Respiratory protection may be needed for frequent or heavy exposure.

### General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

## Section 9: Physical and Chemical Properties

	Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
<b>Benzene</b>	Liquid	Colorless	Colorless	N/A	Liquid	Gasoline-like	N/A
<b>Oxygen</b>	Gas	Clear	Colorless	N/A	Gas	Odorless	Tasteless
<b>Nitrogen</b>	Gas	Clear	Colorless	N/A	Gas	Odorless	Tasteless

	Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
<b>Benzene</b>	12 F (-11 C) (CC)	IB	N/A	928 F (498 C)	0.078	0.012
<b>Oxygen</b>	Not flammable	Not available	Not available	Nonflammable	Nonflammable	Nonflammable
<b>Nitrogen</b>	Not flammable	Not available	Not available	Nonflammable	Nonflammable	Nonflammable

	Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
<b>Benzene</b>	176 F (80 C)	43 F (6 C)	75 mmHg @ 20 C	2.8 (Air=1)	0.8765 @ 20 C	0.18% @ 25 C	Not available	4.68 ppm	5.1 (butyl acetate=1)	0.6468 cP @ 20 C
<b>Oxygen</b>	-297 F (-183 C)	-360 F (-218 C)	760 mmHg @ -183 C	1.1 (Air=1)	Not applicable	3.2% @ 25 C	Not applicable	Not available	Not applicable	0.02075 cP @ 25 C
<b>Nitrogen</b>	-321 F (-196 C)	-346 F (-210 C)	760 mmHg @ -196 C	0.967 (Air=1)	Not applicable	1.6% @ 20 C	Not applicable	Not available	Not applicable	0.01787 cP @ 27 C

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
<b>Benzene</b>	78.11	C6-H6	Not available	Not available	0%	1	Soluble: Acetone, alcohol, carbon disulfide, acetic acid, carbon tetrachloride, chloroform, ether, oils
<b>Oxygen</b>	31.9988	O2	1.309 g/L @ 25 C	Not available	Not applicable	Not applicable	Soluble: Alcohol
<b>Nitrogen</b>	28.0134	N2	1.2506 g/L	Not available	100%	1	Soluble: Liquid ammonia

## Section 10: Stability and Reactivity

	Stability	Conditions to Avoid	Incompatible Materials
<b>Benzene</b>	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	CHROMIC ANHYDRIDE or PERMANGANIC ACID - can explode on contact. CHLORINE - can explode. NITRIC ACID, OZONE, DIOXYGEN DIFLUORIDE, DIOXYGENYL TETRAFLUOROBORATE, LIQUID OXYGEN, PERMANGANIC ACID, PEROXODISULFURIC ACID or PEROXOMONOSULFURIC ACID - may react violently or explosively with risk of fire. DIBORANE - spontaneously explosive reaction occurs on contact with benzene vapor in the air. METAL PERCHLORATES (e.g. silver perchlorate) - if recrystallized from benzene, can explode spontaneously. NITRYL PERCHLORATE - reaction with benzene can give a slight explosion and flash. INTERHALOGENS - benzene ignites on contact with bromine pentafluoride, bromine trifluoride and iodine heptafluoride, and interacts violently with chlorine trifluoride and iodine pentafluoride). CONCENTRATED HYDROGEN PEROXIDE or SODIUM PEROXIDE or POTASSIUM PEROXIDE - spontaneously flammable. URANIUM HEXAFLUORIDE - reacts vigorously.
<b>Oxygen</b>	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Combustible materials, halo carbons, metals, bases, reducing agents, amines, metal salts, oxidizing materials, alkaline earth and alkali metals
<b>Nitrogen</b>	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Metals, oxidizing materials

	Hazardous Decomposition Products	Possibility of Hazardous Reactions
<b>Benzene</b>	Oxides of carbon	Will not polymerize.
<b>Oxygen</b>	Miscellaneous decomposition products	Will not polymerize.
<b>Nitrogen</b>	Oxides of nitrogen	Will not polymerize.

## Section 11: Toxicology Information

### Acute Effects

	Oral LD50	Dermal LD50	Inhalation
<b>Benzene</b>	1 ml/kg oral-rat LD50	>9400 ul/kg skin-rabbit LD50	Irritation, ringing in the ears, nausea, vomiting, chest pain, difficulty breathing, irregular heartbeat, headache, drowsiness, symptoms of drunkenness, disorientation, blurred vision, lung congestion, blood disorders, paralysis, convulsions, coma
<b>Oxygen</b>	Not established	Not established	Irritation, changes in body temperature, nausea, difficulty breathing, irregular heartbeat, dizziness, disorientation, hallucinations, mood swings, pain in extremities, tremors, lung congestion, convulsions
<b>Nitrogen</b>	Not available	Not available	Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma

	<b>Eye Irritation</b>	<b>Skin Irritation</b>	<b>Sensitization</b>
<b>Benzen</b>	Irritation	Irritation, blisters	Aspiration hazard, Category 1; H304: May be fatal if swallowed and enters airways. Skin irritation, Category 2; H315: Causes skin irritation. Eye irritation, Category 2; H319: Causes serious eye irritation. Germ cell mutagenicity, Category 1B; H340: May cause genetic defects. Carcinogenicity, Category 1A; H350: May cause cancer. Specific Target Organ Toxicity (repeated exposure), Category 1; H372: Causes damage to organs through prolonged or repeated exposure.
<b>Oxygen</b>	No information on significant adverse effects	No information on significant adverse effects	No significant target effects reported.
<b>Nitrogen</b>	Contact with rapidly expanding gas may cause burns or frostbite	No information on significant adverse effects	Difficulty breathing

### Chronic Effects

	<b>Carcinogenicity</b>	<b>Mutagenicity</b>	<b>Reproductive Effects</b>	<b>Developmental Effects</b>
<b>Benzen</b>	OSHA: Carcinogen; NTP: Known Human Carcinogen; IARC: Human Sufficient Evidence, Animal Sufficient Evidence, Group 1; ACGIH: A1 - Confirmed Human Carcinogen; EC: Category 1	Available.	Available.	No data
<b>Oxygen</b>	Not known.	Available.	Available.	No data
<b>Nitrogen</b>	Not hazardous	Not available	Not available	No data

## Section 12: Ecological Information

### Fate and Transport

	<b>Eco toxicity</b>	<b>Persistence / Degradability</b>	<b>Bioaccumulation / Accumulation</b>	<b>Mobility in Environment</b>
<b>Benzen</b>	Fish toxicity: Acute LC50 9.2 to 11.7 mg/L Fresh water Rainbow fish; 9200 ug/L 96 hour(s) LC50 (Mortality) Rainbow trout, donaldson trout (Oncorhynchus mykiss) Invertebrate toxicity: 10000 ug/L 48 hour(s) EC50 (Immobilization) Water flea (Daphnia magna) Algal toxicity: 41000 ug/L 8 hour(s) EC50 (Growth) Green algae (Selenastrum capricornutum) Phyto toxicity: 25 ug/L 24 day(s) (Residue) Wood frog (Rana sylvatica) Other toxicity: Not available	Not available	4360 ug/L 24 day(s) BCF (Residue) Northern anchovy (Engraulis mordax) 97 ug/L	Not available
<b>Oxygen</b>	Fish toxicity: Not available Invertebrate toxicity: Not available	Not available	Low bioaccumulation	Not available

	Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available			
<b>Nitrogen</b>	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available

## Section 13: Disposal Considerations

<b>Benzene</b>	Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U019. Hazardous Waste Number(s): D018. Dispose of in accordance with U.S. EPA 40 CFR 262 for concentrations at or above the Regulatory level. Regulatory level- 0.5 mg/L. Dispose in accordance with all applicable regulations.
<b>Oxygen</b>	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
<b>Nitrogen</b>	Dispose in accordance with all applicable regulations.

## Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

### DOT Information For This Mixture

<b>Shipping Name</b>	Compressed gas, n.o.s. (Nitrogen, Oxygen)
<b>UN Number</b>	UN1956
<b>Hazard Class</b>	2.2
<b>Hazard Information</b>	Non-Flammable Gas

### Individual Component Information

	Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
<b>B e n z e n e</b>	Benzene	UN1114	3	II	3	5 kg or L	60L	N/A
<b>O x y g e n</b>	Oxygen, compressed	UN1072	2.2	Not available	2.2; 5.1	75 kg or L	150 kg	N/A



	Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
<b>Nitrogen</b>	Nitrogen, compressed	UN1066	2.2	Not applicable	2.2	75 kg or L	150 kg	N/A

### Canadian Transportation of Dangerous Goods

	Shipping Name	UN Number	Class	Packing Group / Risk Group
<b>Benzene</b>	Benzene	UN1114	3	II
<b>Oxygen</b>	Oxygen, compressed	UN1072	2.2; 5.1	Not applicable
<b>Nitrogen</b>	Nitrogen, compressed	UN1066	2.2	Not applicable

## Section 15: Regulatory Information

### U.S. Regulations

	CERCLA Sections	SARA 355.30	SARA 355.40
<b>Benzene</b>	10 LBS RQ	Not regulated.	Not regulated.
<b>Oxygen</b>	Not regulated.	Not regulated.	Not regulated.
<b>Nitrogen</b>	Not regulated.	Not regulated.	Not regulated.

### SARA 370.21

	Acute	Chronic	Fire	Reactive	Sudden Release
<b>Benzene</b>	Yes	Yes	Yes	No	No
<b>Oxygen</b>	No	No	Yes	No	Yes
<b>Nitrogen</b>	Yes	No	No	No	Yes

### SARA 372.65

<b>Benzene</b>	Benzene
<b>Oxygen</b>	Not regulated.
<b>Nitrogen</b>	Not regulated.

### OSHA Process Safety

<b>Benzene</b>	Not regulated.
<b>Oxygen</b>	Not regulated.
<b>Nitrogen</b>	Not regulated.

### State Regulations

	CA Proposition 65
<b>Benzene</b>	WARNING: This product can expose you to chemicals including Benzene, which is known to the State of California to cause cancer. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a> .
<b>Oxygen</b>	Not regulated.
<b>Nitrogen</b>	Not regulated.

### Canadian Regulations

	WHMIS Classification
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<b>Benzene</b>	B2, D2A, D2B
<b>Oxygen</b>	A,C
<b>Nitrogen</b>	A

### National Inventory Status

	<b>US Inventory (TSCA)</b>	<b>TSCA 12b Export Notification</b>	<b>Canada Inventory (DSL/NDSL)</b>
<b>Benzene</b>	Listed on inventory.	Not listed.	Not determined.
<b>Oxygen</b>	Listed on inventory.	Not listed.	Not determined.
<b>Nitrogen</b>	Listed on inventory.	Not listed.	Listed on inventory.

## Section 16: Other Information

	<b>NFPA Rating</b>
<b>Benzene</b>	HEALTH=3 FIRE=3 REACTIVITY=0
<b>Oxygen</b>	HEALTH=0 FIRE=0 REACTIVITY=0 SPECIAL=OX
<b>Nitrogen</b>	HEALTH=0 FIRE=0 REACTIVITY=0 SPECIAL=SA

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard